

# Claims

- [c1] 1. A method of synthesizing layout patterns, comprising the steps of:
- embodying Walsh patterns in a set of Walsh pattern matrices;
  - processing at least one from the set of Walsh pattern matrices to form a set of test matrices; and
  - mapping the set of test matrices to a test pattern set.
- [c2] 2. The method of claim 1, wherein the set of Walsh pattern matrices are generated using an Nth order Hadamard matrix, wherein N dictates the size of each matrix.
- [c3] 3. The method of claim 1, wherein the processing step utilizes a Boolean operation.
- [c4] 4. The method of claim 3, wherein the Boolean operation utilizes at least one logical operation selected from the group consisting of: a logical or, logical nor, logical and, and logical nand.
- [c5] 5. The method of claim 1, wherein the combining step determines a set of combinatorial indices for  $n$  choose  $k$  matrices, wherein  $n$  represents the number of matrices in

the set of Walsh pattern matrices, and  $k$  is the number of matrices in a group of processed matrices.

- [c6] 6. The method of claim 5, wherein  $k$  is selected as large as possible given a set of computational constraints.
- [c7] 7. The method of claim 1, wherein the mapping step maps matrix entries to tiles in a minimum space, minimum width grid, wherein each tile is assigned a value of either level on or level off.
- [c8] 8. The method of claim 7, wherein the mapping step adjusts spacing of tiles when a transition from on to off, or off to on is detected.
- [c9] 9. The method of claim 1, comprising the further step of pruning the pattern set based on a predetermined set of rules.
- [c10] 10. A system for generating a set of test patterns to test an optical proximity correction algorithm, comprising:
  - a system that generates a set of Walsh pattern matrices;
  - a system that processes groups of matrices from the set of Walsh pattern matrices to form a set of test matrices; and
  - a system that maps the set of test matrices to a test pattern set.

- [c11] 11. The system of claim 10, wherein the processing system determines a set of combinatorial indices for  $n$  choose  $k$  matrices, wherein  $n$  represents the number of matrices in the set of Walsh pattern matrices, and  $k$  is the number of matrices in each group of matrices.
- [c12] 12. The system of claim 10, wherein the mapping system maps matrix entries to tiles in a minimum space, minimum width grid, wherein each tile is assigned a value of either level on or level off.
- [c13] 13. The method of claim 12, wherein the mapping system adjusts spacing of tiles when a transition from on to off, or off to on, is detected.
- [c14] 14. The method of claim 10, further comprising a system for pruning the pattern set based on a predetermined set of rules.
- [c15] 15. A program product stored on a recordable medium for generating a set of test patterns to test an optical proximity correction algorithm, the program product comprising:
- means for generating a set of Walsh pattern matrices;
  - means for processing groups of matrices from the set of Walsh pattern matrices to form a set of test matrices;

means for mapping the set of test matrices to a test pattern set.

- [c16] 16. The program product of claim 15, wherein the combining means determines a set of combinatorial indices for  $n$  choose  $k$  matrices, wherein  $n$  represents the number of matrices in the set of Walsh pattern matrices, and  $k$  is the number of matrices in each group of matrices.
- [c17] 17. The program product of claim 15, wherein the processing means processes matrices using a Boolean operation.
- [c18] 18. The program product of claim 15, wherein the mapping means maps matrix entries to tiles in a minimum space, minimum width grid, wherein each tile is assigned a value of either level on or level off.
- [c19] 19. The program product of claim 18, wherein the mapping means adjusts spacing of tiles when a transition from on to off, or off to on, is detected.
- [c20] 20. The program product of claim 15, further comprising means for pruning the pattern set based on a predetermined set of rules.